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## DEVELOPMENT AND TRANSFER OF TECHNOLOGIES

### STATUS OF THE CONSULTATIVE PROCESS (DECISION 4/CP.4)

#### Draft text on a framework for meaningful and effective actions to enhance the implementation of Article 4.5 of the Convention

#### Note by the Chairman

#### CONTENTS

|                                                                                                                                         | Paragraphs | Page |
|-----------------------------------------------------------------------------------------------------------------------------------------|------------|------|
| I. INTRODUCTION .....                                                                                                                   | 1 - 4      | 2    |
| A. Mandate .....                                                                                                                        | 1 - 2      | 2    |
| B. Scope of the note .....                                                                                                              | 3          | 2    |
| C. Possible action by the SBSTA .....                                                                                                   | 4          | 2    |
| II. STATUS OF THE CONSULTATIVE PROCESS .....                                                                                            | 5 - 7      | 2    |
| III. DRAFT FRAMEWORK FOR MEANINGFUL AND<br>EFFECTIVE ACTIONS TO ENHANCE THE<br>IMPLEMENTATION OF ARTICLE 4.5<br>OF THE CONVENTION ..... | 8 - 37     | 4    |
| A. Purposes .....                                                                                                                       | 8          | 4    |
| B. Overall approach .....                                                                                                               | 9 - 20     | 4    |
| C. Key themes and areas for possible activities .....                                                                                   | 21 - 36    | 5    |

## **I. INTRODUCTION**

### **A. Mandate**

1. The Conference of the Parties, by its decision 9/CP.5, requested the Chairman of the Subsidiary Body for Scientific and Technological Advice (SBSTA), with the assistance of the secretariat, to make available at the thirteenth session of the SBSTA, a report on the outcome of the consultative process incorporating a draft text on a framework for meaningful and effective actions to enhance the implementation of Article 4.5 of the Convention, with a view to adopting a decision at its sixth session (FCCC/CP/1999/6/Add.1).

2. At its twelfth session (FCCC/SBSTA/2000/5, para. 52 (e)), the SBSTA further requested the Chairman, with the assistance of the secretariat, in preparing such a report, to take into account the information contained in the workshop reports (FCCC/SBSTA/1999/11, FCCC/SBSTA/2000/INF.2, FCCC/SBSTA/2000/INF.6) and as summarized in document FCCC/SBSTA/2000/4, the submissions from Parties (FCCC/SBSTA/2000/MISC.2), and the Intergovernmental Panel on Climate Change (IPCC) *Special Report on Methodological and Technological Issues in Technology Transfer*.

### **B. Scope of the note**

3. This note responds to the above mandates. It reflects the outcome of the consultations held during the pre-session week of informal meetings and workshops and the formal twelfth session of the SBSTA. To assist Parties in their preparation for the sixth session of the Conference of the Parties, Section III of this document has been prepared in a format that the Parties may wish to consider using it as elements for inclusion in the draft decision for adoption at that session.

### **C. Possible action by the SBSTA**

4. The SBSTA may wish to consider, prioritize and develop a more focused list of possible elements for inclusion in a framework for meaningful and effective actions to enhance the implementation of Article 4.5 of the Convention. It may wish to develop a draft decision for adoption by the Conference of the Parties at its sixth session, if the format of this note is amenable to such a purpose.

## **II. STATUS OF THE CONSULTATIVE PROCESS**

5. At its twelfth session, the SBSTA took note of the successful completion of the three regional workshops on the transfer of technology consultative process organized by the secretariat with the assistance of the governments of the United Republic of Tanzania, the Philippines, and El Salvador (FCCC/SBSTA/2000/5, paragraph 52 (a)-(b)). The workshops generated a number of ideas as contained in the workshop reports (see paragraph 2 above) and as

summarized in the note by the Chairman on possible elements of a framework for meaningful and effective actions to enhance the implementation of Article 4.5 of the Convention (FCCC/SBSTA/2000/4).

6. The Chairman continued his consultations by convening meetings with representatives of Parties and experts during the pre-session week and the formal twelfth session of the SBSTA. The consultations focused on reviewing progress made at the three regional workshops, exchanging views on the IPCC *Special Report on Methodological and Technological Issues in Technology Transfer*, and reviewing the pilot efforts of the secretariat, in cooperation with the Climate Technology Initiative and the United States Government, to develop the secretariat technology web page. During the consultations, the representatives of Parties:

(a) Were given an overview, by a representative of the IPCC Working Group III, of the IPCC *Special Report on Methodological and Technological Issues in Technology Transfer*. The report stressed that the goal of this consultative process should be to increase the flow and quality of technology transfer through an integrated and country-driven approach;

(b) Were provided with information by the secretariat on its pilot project on a technology cooperation project inventory database. The database primarily focuses on projects and activities which have been undertaken by Parties to enhance technology transfer. While far from complete, it was recognized that such a database could be of value to the process by allowing analysis of the direction, magnitude and type of technology flows and providing a source of information on projects which could be emulated and replicated;

(c) Welcomed the presentations by experts from different regions on a framework for meaningful and effective actions. These presentations reinforced many of the key outcomes of the regional workshops, including the importance of considering adaptation technologies, assessing technology needs, developing integrated approaches, and focusing on concrete actions and activities;

(d) Focused discussions on setting a strategy for future deliberations by first seeking broad agreement on key themes or prioritized areas in the development and transfer of technologies and then addressing the more specific activities to address the concerns under each of these themes. During the consultations, the Parties were able to reach agreement on the following key themes:

- (i) Technology needs and needs assessments;
- (ii) Technology information;
- (iii) Enabling environments;
- (iv) Capacity-building;
- (v) Mechanisms for technology transfer;

(e) Stressed the need for adaptation technologies that include the above-mentioned themes in the process of implementation.

(f) Received an offer from the Government of the United States of America to host an informal consultation on the transfer of technology consultative process.

7. Based on the information generated through the consultative process as described above, a draft framework for meaningful and effective actions to enhance the implementation of Article 4.5 of the Convention is presented below.

### **III. DRAFT FRAMEWORK FOR MEANINGFUL AND EFFECTIVE ACTIONS TO ENHANCE THE IMPLEMENTATION OF ARTICLE 4.5 OF THE CONVENTION**

#### **A. Purposes**

8. A framework for meaningful and effective actions to enhance the implementation of Article 4.5 of the Convention has three specific purposes:

(a) To assist the Parties to enhance the implementation of their commitments under Article 4.5 of the Convention;

(b) To facilitate the transfer of technology process, including the promotion of the transfer of technologies under the Convention, by increasing the flow and the quality of technology transfer;

(c) To ensure that the Conference of the Parties has sufficient information to make decisions regarding the implementation of Article 4.5 of the Convention and the transfer of technologies under the Convention.

#### **B. Overall approach**

9. Technology transfer is a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different stakeholders such as governments, private sector entities, financial institutions, non-governmental organizations and research and education institutions.

10. Technology for mitigating and adapting to climate change should be environmentally sound, include both "soft" and "hard" elements of technology, including capacity-building, and should support sustainable development.

11. The technology transfer process should enhance the networks of and partnerships between stakeholders.

12. A high priority and fast-track treatment should be given to the transfer of technology to assist Parties to achieve the ultimate objective of the Convention.

13. The process of technology transfer must be equitable, bottom-up and country-driven in recognition of the diverse environmental, geographic, economic and social characteristics of developing countries and regions.
14. There is a need to balance the development and transfer of greenhouse gas mitigation and adaptation technologies. Some developing countries or regions will give priority to adaptation technologies while others will give priority to mitigation technologies.
15. Technology transfer should focus on products and techniques with multiple benefits that address the objective of climate change and at the same time respond to national development priorities such as poverty alleviation, socio-economic development, improvement of public health and reduction of environmental pollution.
16. The role of governments is crucial in providing an enabling environment to remove policy barriers and increase private sector participation and in affecting the flow, quality and success of technology transfer.
17. The process of technology transfer should build upon and/or incorporate the current activities of the private sector, non-governmental organizations, research institutions and bilateral and multilateral institutions to transfer environmentally sound mitigation and adaptation technologies.
18. The transfer of technology requires an integrated approach that focuses on the development of national and/or regional strategies on technology transfer. Development of these strategies should take into account the interests and interactions of the different stakeholders involved in the process of technology transfer.
19. The private sector in developing country Parties and Annex II Parties plays a critical role in the transfer of technology. Successful technology transfer most often occurs through engagement of all affected interests. This entails collaboration among the government, the community, and the private sector. Although all groups are important, without the private sector only limited technology transfer will occur.
20. Developing countries require assistance from the developed countries to enhance and/or develop human capacity and appropriate institutions and to acquire and adapt specific hardware technologies to local conditions.

### **C. Key themes and areas for possible activities**

21. During the consultations at the twelfth session of the SBSTA, a broad consensus emerged among Parties on the five key themes or areas for inclusion as possible elements of a framework for meaningful and effective actions to enhance the implementation of Article 4.5 of the Convention. Within these broad themes, Parties were able to identify "the what" or the possible activities under each theme. The five key themes are technology needs and needs assessments, technology information, enabling environments, capacity-building, and mechanisms for technology transfer.

22. As the preliminary broad consensus emerged, the Chairman did not have the opportunity to begin the discussion on "how" possible activities/actions should be undertaken. However, the Parties may wish to recall that the workshop reports (see paragraph 2 above) contain information related to possible actions by various stakeholders. The Chairman did not attempt to hold a debate or to reach agreement among participants on the appropriateness, practicability or acceptability of these suggestions. Bearing this in mind, the information contained in this document relating to "how" is provided as an input to further discussions on the design of an appropriate framework for meaningful and effective actions to enhance the implementation of Article 4.5 of the Convention. The information is drawn from the documents identified in paragraph 2.

### **1. Technology needs and needs assessments**

#### **Possible areas for activities or actions**

23. Technology needs assessments are an important element of a framework to enhance the transfer of technology under the Convention. The following activities should be considered in the implementation of technology needs assessments:

- (a) Identification of technology needs to assist the developing countries to meet their sustainable development goals and the objective of the Convention;
- (b) Sectoral analyses which are rigorous and bottom-up to identify both mitigation and adaptation technologies as appropriate to each country and/or region;
- (c) Vulnerability assessments to assist in prioritizing technologies related to anticipatory adaptation to climate change;
- (d) Technology needs assessments that follow a country driven process to evaluate and prioritize local needs for environmentally sound technologies (ESTs).

24. Technology needs assessments should embrace a consultative approach and include all stakeholders including national and local governments, domestic and international business, technical and research institutions, and non-governmental organizations;

25. Technology needs assessments should address market potential, greenhouse gas (GHG) mitigation (or adaptation) potential, technology impact analyses (e.g., development benefits, environmental benefits) as well as identification and analysis of the barriers to technology transfer and the actions to remove these barriers.

26. The outcome of technology needs assessments should be country- or region-specific technology implementation plans. These plans should identify a prioritized set of technology needs and a portfolio of climate technology activities for both mitigation and adaptation.

Possible means of implementing technology needs assessments

27. The following are possible means of implementing technology needs assessments:

(a) Developed country Parties and other developed Parties included in Annex II shall provide financial and technical assistance to developing country Parties in meeting technology needs and carrying out needs assessments; (Group of 77 and China)

(b) Cooperative programmes shall be established so that financial and technical assistance can be provided to developing countries to conduct technology needs assessments; (Group of 77 and China), (China)

(c) Non-Annex I Parties shall include in their national communications information on the outcome of their technology needs assessments. (European Union), (United States of America), (Canada)

**2. Technology information**Possible areas for activities or actions

28. The assessment of and access to information are essential to technology transfer. A framework should improve the flow of, access to, and quality of information relating to the development and transfer of mitigation and adaptation technologies under the Convention. The following activities should be considered in the implementation of technology information strategies:

(a) Technology information programmes that are demand-driven and result-oriented and that target specific stakeholder needs. Such programmes should facilitate informed decision-making and should range from public awareness programmes to public and private sector capacity-building;

(b) Information assessment and technology infrastructure efforts that increase the flow of information rather than addressing specific information barriers;

(c) Information systems which are integrated into national, regional and international networks through specialized centres (e.g. energy efficiency centres), trade organizations, non-government organizations, media, and community groups; establishment of benchmarks, standards and labelling for ESTs which aim to improve the comparability and quality of technology information. Indicators have the potential to improve technology and to evaluate technology performance, improve quality and discourage the transfer of outdated technology. They can also be used to establish criteria for measuring the technology transfer programmes and monitoring and reporting on implementation.

Possible means of implementing technology information activities

29. The following are possible means of implementing technology information activities:

(a) Developed country Parties shall each establish, a 'one-stop technology transfer shop' to coordinate and implement technology transfer programmes. These 'one-stop shops'

could assist with the preparation of projects and programmes to respond to prioritized needs for mitigation and adaptation; (Group of 77 and China), (China)

(b) Developed country Parties shall develop inventories of available environmentally sound technologies including those in the public domain as well as technology transfer activities in the past or present; (Group of 77 and China), (China)

(c) An international, regional and subregional information clearing house shall be established. The information clearing house shall have the following objectives: (China), (Canada), (United States of America), (Alliance of Small Island States)

(i) To improve information access for developing and other countries on existing technology assistance programmes;

(ii) To provide donors and private investors with information on countries' technology needs opportunities;

(iii) To create an information network on technology inventories, donor programmes and other activities related to technology transfer.

(d) To build on the success of current work, including that undertaken by the UNFCCC secretariat, in cooperation with the Climate Technology Initiative, to develop a new search engine that allows for quick access to reliable information on ESTs, know-how and good practice; (Canada)

(e) All Parties shall support initiatives to educate business, key government agencies responsible for approving new investment projects, and consumers about the benefits and applications of specific technologies.

### **3. Enabling environments**

#### **Possible areas for activities or actions**

30. An enabling environment for technology transfer, as described in the IPCC *Special Report on Methodological and Technological Issues in Technology Transfer*, includes macroeconomic conditions, the involvement of social organizations, national institutions for technology innovation, human and institutional capacities for selecting and managing technologies, the underpinnings of sustainable markets for environmentally sound technologies, national legal institutions that reduce risk and protect intellectual property rights, codes and standards, research and technology development, and the means for addressing equity issues and respecting existing property rights.

31. The following activities should be considered in creating the enabling environments for technology transfer:

- (a) The identification and analysis of barriers at each stage of the technology transfer process, such as distorted incentives, deficiencies in the legal system and inadequate regulation to ensure private sector participation;
- (b) The development of macro-economic conditions including trade policies, exchange rates, competitive markets and foreign investment policies that contribute to sustainable development and economic growth; efficiently functioning EST markets should be promoted through the introduction of appropriate pricing structures, taxes, incentives, subsidies, etc.;
- (c) The development of effective and efficient legal and regulatory systems, including development of industry codes, product standards, and certification, as well as regimes for the protection of intellectual property rights. Additionally, efficient rules for transactions such as terms of licensing should be promoted to reduce perceived risks and encourage innovation by private sector participants;
- (d) The introduction of innovative financing for EST, for example through the development of public/private and private/private partnerships or through the creation and promotion of financial intermediaries such as energy service companies;
- (e) The development of a market infrastructure, in terms of both physical and business support infrastructures. Research and development policies should also be strengthened and the utilization of networks of research institutions should be encouraged. These networks may also facilitate the transfer of publicly developed and financed technologies.

Possible means of creating enabling environments for technology transfer

32. The following are possible means of creating enabling environments for technology transfer:

- (a) All governments shall play an important role in promoting effective enabling environments at the global and country level for the transfer of ESTs;
- (b) Developed country Parties and other developed country Parties included in Annex II shall implement domestic programmes to discourage industries in their countries from applying restrictive business practices; (Group of 77 and China)
- (c) Developed country Parties shall develop and implement domestic actions and incentives, e.g., earmarked subsidies for the development and transfer of ESTs, export credit facilities, government purchase contracts, tax preferences, as well as appropriate regulations to promote transfer of ESTs by the private sector; (China), (Group of 77 and China)
- (d) All Parties shall promote joint research and development programmes and joint patenting between developed and developing countries and among developing countries, both bilaterally and multilaterally; (Republic of Korea)

(e) Developing country Parties shall identify and establish focal points to coordinate domestic technology transfer activities and actions such as the development of a portfolio of climate technology actions for mitigation and adaptation; (Group of 77 and China)

(f) Non-Annex I Parties shall develop and enhance regional and South-South technology transfer initiatives, particularly for adaptation technologies. (Group of 77 and China), (United States of America)

(g) All Parties shall introduce measures to enforce regulations, taxes, codes, standards, legal systems, protection of intellectual property rights to encourage innovation, foreign direct investments and the promotion of open and competitive markets for ESTs; (Canada)

(h) Developed country Parties shall purchase patents and licences on commercial terms for their transfer to developing countries on non-commercial terms, taking into account the need to protect intellectual property rights; (China)

(i) An environmentally sound technology bank or centre shall be established. The bank or centre shall serve as a vehicle to share and exchange publicly funded ESTs which could be offered on a voluntary basis; (Republic of Korea)

(j) All Parties shall promote networking amongst private and public stakeholders to help strengthen capacity for technology transfer; (European Union)

#### **4. Capacity-building**

##### **Possible areas for activities or actions**

33. Adequate capacity in the form of human, organizational, and information assessment capacity, is required at all stages of the technology transfer process. Capacity-building is a cross-cutting issue, for which overlapping needs and activities extend across many different aspects of activities under the Convention. The needs and activities related to capacity-building for a technology transfer framework should take into account elements pertaining to capacity-building for other aspects of the Convention. The following are activities related to effective capacity-building in technology transfer:

(a) Capacity-building to support the implementation of technology needs assessments, develop technology implementation plans, access information on assessment of technology, develop effective enabling environments and implement technology transfer mechanisms;

(b) Capacity-building to strengthen public and private networks in which diverse organizations contribute to technology transfer;

- (c) Capacity-building to strengthen public institutions such as regulatory, legal and financial institutions, to enable them to effectively manage and coordinate the process of technology transfer;
- (d) Capacity-building to enhance the involvement of developing countries in research and development of climate-related ESTs so as to extend and adapt technologies to local conditions;
- (e) Capacity-building in the public and private sectors to enhance the identification, development and implementation, including monitoring and evaluation, of projects.

#### Possible means of building capacity

34. The following are possible means of building capacities of all stakeholders particularly of the developing countries:

- (a) All Parties shall enhance the skills of enterprises in the installation, operation, maintenance and adaptation of specific technologies, and broaden understanding of methodologies for evaluating alternative technological options; (United States of America)
- (b) All Parties shall strengthen existing regional institutions, taking into account consideration country- and sector-specific peculiarities; (Group of 77 and China)
- (c) Demonstration or pilot projects on capacity-building in technology transfer shall be established. (Group of 77 and China), (China)

### **5. Mechanisms for technology transfer**

35. The objective of mechanisms for technology transfer is to enhance the coordination of the full range of stakeholders in different countries and regions and to engage them in cooperative efforts to accelerate the development and diffusion, including transfer, of environmentally sound technologies, know-how and practices to and between developing countries through technology cooperation and partnerships (public/public, private/public and private/private).

#### Possible mechanisms relating to technology transfer

36. To achieve the above-mentioned objectives and the various suggested activities under each theme, the Parties may wish to consider the following actions as part of a framework for the implementation of meaningful and effective actions to enhance the implementation of Article 4.5 of the Convention:

- (a) To establish a review body or system to continue the dialogue for the advancement of technology transfer under the Convention. The body may have the functions of evaluating, monitoring and reviewing the current situation and the progress made on technology transfer under Article 4.5 of the Convention as well as other relevant articles of the Convention (China). This could include the establishment of an ad hoc panel of experts on development and transfer of technology (the regional workshops);

(b) To establish a technology transfer mechanism as an umbrella mechanism through which the technology needs of developing countries can be identified and communicated, capacity and capacity-building can be enhanced, and technologies and know-how can be transferred, operated, disseminated and maintained (China) (Group of 77 and China). This may include the establishment of an intergovernmental technical advisory panel (Group of 77 and China, Republic of Korea, and China), an innovative mechanism in the context of UNFCCC to assist developing country Parties to obtain environmentally sound technologies and know-how to address climate change on non-commercial and preferential terms, thus contributing to the ultimate objective of the Convention, and a unit in the UNFCCC secretariat to coordinate with the national focal points for technology transfer). The terms of reference of this mechanism shall be defined in detail; (Group of 77 and China), (China)

(c) To establish national systems of innovation which integrate the elements of capacity-building, access to information and an enabling environment into a comprehensive approach to EST transfer; (IPCC special report)

(d) To establish funding specifically for technology transfer within the Convention financial mechanism to support capacity-building, transfer of technology information, needs assessments, research and development on endogenous capacities to screen mitigation and adaptation projects for environment friendliness and enhancement of the implementation of Parties' commitments under the Convention. Funding sources can be the Annex II Parties, international organizations, multilateral development banks, etc.; (Group of 77 and China)

(e) To establish a revolving EST investment fund to finance EST transfer projects and programmes, with payback to the fund from the proceeds of the projects through profit sharing; (Republic of Korea)

(f) To use integrated approaches by strengthening existing bilateral and/or multilateral institutions including existing programmes and activities to enhance technology transfer (European Union, United States of America). In view of the importance of coordination of existing sources of funding offered by the Global Environment Facility, and multilateral and bilateral development programmes, there is a need to improve the availability of information on existing activities, based on information provided by the national communications of the Parties; (European Union)

(g) To utilize the Global Environment Facility to initiate programmes to implement the decisions of the Conference of the Parties in relation to Article 4.5 of the Convention; (Group of 77 and China)

(h) To consider using the Climate Technology Initiative as one possible mechanism to coordinate donor responses to country-driven technology needs (US) as well as to coordinate other technology transfer programmes and activities among the donor countries; (United States of America, European Union, Canada and Japan)

(i) To establish a multilateral joint climate change research and development programme to promote joint research and development among and between developed and developing countries; (Republic of Korea)

(j) To consider the establishment of cooperation programmes to promote research and innovation for the adaptation of technologies, in particular with the least developed countries; (European Union)

(k) To consider the potential significant role of the clean development mechanism and joint implementation under the Kyoto Protocol as vehicles for technology transfer (United States, European Union, Canada). There is a need to consider the positive linkages in the design of technology transfer action in a framework to enhance the implementation of Article 4.5 of the Convention; (United States, European Union, Canada, Japan)

(l) To refuse the notion that the use of the clean development mechanism will be the primary tool in implementing Article 4.5 of the Convention;<sup>1</sup> (Alliance of Small Island States) (Group of 77 and China)

(m) To establish regional and subregional climate change centres that will serve as clearing houses on all aspects of climate change, including technology and technology transfer. Such institutions will be in continuous liaison with national, regional and international institutions involved in technology research and development, in both the private and the public sectors. These centres will also be able to serve as quality control nodes and will advise on technology adoption and operation and maintenance. (Group of 77 and China, AOSIS, and the regional workshops).

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<sup>1</sup> Group of 77 and China proposed the development of separate decisions on Article 4.5 of the Convention and Article 12 of the Kyoto Protocol.